



ASLI QoL 2022



# AicQoL2022Penang

<https://www.amerabra.org>

10<sup>th</sup> AMER International Conference on Quality of Life  
Shangri-la Rasa Sayang, Malaysia, 16-17 Mar 2022



## Household Refuse Management Behavior Among Urban Residents

Rohana Sham <sup>1</sup>, Ng Rui Wen <sup>2</sup>, Mariam Setapa <sup>3</sup>, Mohammad Nazmuzaman Hye <sup>4</sup>

<sup>1</sup> Department of Logistics Management, Faculty of Business Management, UCSI University, Malaysia,

<sup>2</sup> Graduate Business School, Faculty of Business Management, UCSI University, Malaysia,

<sup>3</sup> Department of Management, Faculty of Business Management, Universiti Teknologi MARA, Malaysia,

<sup>4</sup> General Manager, Interport Ship Agent LTD, Dhaka, Bangladesh.

[rohana@ucsiuniversity.edu.my](mailto:rohana@ucsiuniversity.edu.my), [1002060157@ucsiuniversity.edu.my](mailto:1002060157@ucsiuniversity.edu.my), [maria135@uitm.edu.my](mailto:maria135@uitm.edu.my), [hye@interport.org](mailto:hye@interport.org)  
Tel: 012-5570602

### Abstract

A household refuse management system is a system to manage refuse treatment, including collection, transportation, and treatment of unwanted household items. Therefore, this study tries to understand each household's behavior regarding the refused item they have generated and their behavior towards managing it. Using a questionnaire-based survey with a purposive sampling technique, the data was then submitted to SPSS for further analysis. The findings show that technology, religion, and household behavior have a relationship with the efficiency of the refuse management system among urban residents. Thus, the primary purpose of this study is to examine the factors that affect the success of the refuse management model among the residents of the urban household concerning their daily own household items.

Keywords: Urban Refuse; Environment; Urban Household; Behaviour.

eISSN: 2398-4287 © 2022. The Authors. Published for AMER ABRA cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), ABRA (Association of Behavioural Researchers on Asians/Africans/Arabians) and cE-Bs (Centre for Environment-Behaviour Studies), Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.

DOI: <https://doi.org/10.21834/ebpj.v7i19.3235>

### 1.0 Introduction

Driven by rapid urbanization growth, the population of cities has continued to increase from time to time. This phenomenon had much related to the increase in the refused item from each household (Sham et al., 2020). With the advancement of science and technology and the enhancement of people's living conditions, material consumption requirements are increasing (Sham et al., 2019), increasing solid waste. Municipal solid waste (MSW) is a universal issue affecting all countries, including Malaysia. It is reported that almost 90% of the MSW is disposed of in open landfills with no energy recovery system (Ooi, Woon & Hashim, 2021). This will lead to poor quality of life and neighborhood (Ahmad et al., 2019). Thus, to prevent the world from becoming a "junkyard," it is imperative to establish a robust refuse management system among urban households in managing and taking responsibility for the refuse item being generated from each family. Therefore, the main aim of this study is to establish a clear understanding of household behavior and their attitude toward managing their household refused items. Specifically, the main objective is to examine factors that affect the efficiency of a household refuse management system, determine the significant relationship between the factors that lead towards the efficiency of a household refuse management system, and propose a solution model for a household management system.

eISSN: 2398-4287 © 2022. The Authors. Published for AMER ABRA cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), ABRA (Association of Behavioural Researchers on Asians/Africans/Arabians) and cE-Bs (Centre for Environment-Behaviour Studies), Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.

DOI: <https://doi.org/10.21834/ebpj.v7i19.3235>

## 1.1 Research background

Refuse management system is more challenging for developing. The developing country always chooses dumps and landfills as their general choice to treat refuse because these are the cheapest options. Usually, there are no vital taxes, tariffs, service charges, and loan and debt repayment systems to support its infrastructure. Developing countries generally do not have relatively high air emission standards. Therefore, these countries depend on international donors and moderate national support (Ferronato & Torretta, 2019).

Malaysia introduced the 3Rs program (reduce, reuse, and recycle) in 1992, but it did not impact. The reduction of waste through the 3Rs program is in the pre-contemplation stage (Chua & Bashir, 2020). The Solid Waste and Public Cleansing Management Corporation Act 2007 was enacted. Parliament adopted the Act on July 17, 2007, and it was published in the Government Gazette on August 30, 2007, empowering the federal government to establish the Solid Waste and Public Cleansing Management Corporation 2007. The company is responsible for refuse collection and dumping sites, monitoring, supervising, and enforcing solid refuse management and public cleanliness in the country, and raising public awareness about sustainable waste management and responsible recycling techniques. This initiative is also covered by the Solid Waste and Public Cleansing Acts (Act 672). The importance of Act 672 could be seen in its aim to uniform solid waste management in Malaysia, and the introduction of the Act has enhanced economic growth in the stable waste management sector; for instance, the long term of concession has provided the concession companies good opportunities to invest for good solid waste management facilities (Ghulam Khan et al., 2019).

Thus, people only need to dump garbage, will do it in a particular garbage bin in front of their homes, and garbage trucks will come to transport the trash to the garbage dump for disposal. The system is seen as a failure as it is not monitored comprehensively, leaving the garbage mix and no recycling activity for each household. To fundamentally solve the problem of urban refuse the whole process of refuse management should be carried out according to the principle of sustainable development in waste management, leading to a reduction of its generation and the safe recovery of waste (Smol et al., 2020). To prevent the world from becoming a "junkyard," it is imperative to establish a robust refuse management system as it helps to manage refuse treatment, including collection, transportation, and treatment (Hoorweg & Bhada-Tata, 2012). This system will manage to refuse disposal throughout the supply chain. Due to a lack of adequate refuse management in urban areas, issues such as trash overflow arise, causing severe environmental damage. Therefore, it is necessary to apply a transparent household supply chain to manage the whole process of urban refuse, and it has excellent development prospects.

## 2.0 Refuse Management System

The United Nations predicts that by 2050, the global urban population will increase by 2.5 billion (UN News, 2018). With urbanization, people's consumption levels continue to expand and garbage. Garbage is increasingly hazardous to humans, posing grave danger to people's lives and health. The digestion and comprehensive treatment of home waste in cities have become a significant factor affecting and limiting the city's regular functioning and urban residents' living and working environments (Qasim et al., 2020). Because of this, having a complete refuse management system has become a must-have system for every city. The refuse management of developed countries is very different from other developing countries. Their refuse management systems are very mature, and they all have their own set of systems. One of the countries that have done an excellent job in refuse disposal is South Korea. South Korea's refuse management is controlled from the origin, allowing residents to sort by themselves before discarding it (Lee & Paik, 2011).

According to the Ministry of Housing and Local Government in Malaysia, they had spent millions of Ringgits on refuse treatment in advertisements and campaigns over the past few years. These efforts were aimed at the society to increase their awareness and participation in refuse management. Still, despite having facilities in place, the public has yet to fully embrace the notion of waste separation (Rahim et al., 2019). Thus, the issues of refusal still exist. Because of this, there is currently an apparent lack of a system or process for comprehensive household refuse management in Malaysia. Although the previous study discusses many factors, these are the most critical factors believed to impact the efficient refuse management in each household.

### 2.1 Technology and refuse management system

Technology is a social and technical process that involves "the application of knowledge, tools, and skills to solve practical problems and extend human abilities" (Ellis et al., 2020). Technology innovation in refuse management can improve the system's efficiency. Technology can be integrated into all aspects of the garbage system, such as an innovative IoT-based integrated system consisting of an identification system, an automated lid system, a display system, and a communication system. The system is much more efficient than any other conventional waste management system. It reduces the workforce, avoids spillover of waste, saves time, is more economical, and, most importantly, is an entirely automated system (Sohag & Podder, 2020). In recent years, the application of Information Technology (IT) to manage urban waste collection and transportation has become more extensive (Brunerová et al., 2020).

Mora et al. (2019) added that modern technology or ICT solutions could promote environmentally sound waste management and reduce waste generation. IT can monitor the amount of garbage from the source to the final disposal and record the data related to garbage generation, which can improve the efficiency of urban refuse collection and transportation. For example, cities should implement current refuse treatment technologies such as burning, landfilling, recycling, and window composting to manage refuse. Like Mora et al. (2019) discovered, several cities in Asia and America are working on strategies and taking advantage of the available technological advancements such as radio frequency identification tags and integrated GPS tracking software. All these are refused management treatment technologies suitable for an urban area.

Thus, the following hypothesis was developed:

H<sub>1</sub>: There is a relationship between technology and an efficient refuse management system.

## 2.2 Social structure and refuse management system

Social structure is defined broadly to include many social characteristics, including networks and relationships. However, some specific definitions of social structure describe population distribution and composition in geographic space. The purpose of social structure is to distribute population that includes gender, ethnicity, education, and income in multiple social layers (Saja et al., 2018). This study would refer to the different urban cities structures that alter the efficiency of a refuse management system. Increasing openness and diversification is a development trend of urban society, but it also complicates the entire social structure. Several studies showed that refuse treatment is a significant issue in towns and urban areas (Tsai et al., 2021). This was further supported by Esposito, Ricci, & Sancino (2021), who stated that leadership practices to be enacted by public managers and civic leaders could promote positive social change in managing their waste in their locality. Because of their social structures, most underdeveloped countries struggle with refuse management and collection.

Thus, the following hypothesis was developed:

H<sub>2</sub>: There is a relationship between social structure and an efficient refuse management system.

## 2.3 Religion structure and refuse management system

Religiosity is defined as “the feelings, acts, and experiences of individual men in their solitude, so far as they apprehend themselves to stand in relation to whatever they consider the divine (Mónico & Alferes, 2022). When one believes that more than half of the world's population adheres to some form of religious belief to govern their daily lives, the concept becomes considerably more substantial. Asia, particularly Malaysia, presents an incredibly fascinating policy environment for this argument because practically all of its residents formally accept religious beliefs. This is supported by the dialogue session themed 'Inter-Religious Harmony and Sustainability, representatives from all faiths shared common ground on the environment. This dialogue concluded that religion plays a significant role in ensuring environmental sustainability, and humanity, as God's steward on Earth, has the responsibility to protect it (Bernama, 2017). Generally, most religious communities function through a formal organization with well-known activities supported by the government, corporate sector, and general public (Ross and Guèy, 2021) to form a comprehensive community and environment.

Table 1. Characteristics of recycling operations

Features	Batu Caves Temple (Hinduism)	Surau Al-Husna (Islam)	Beautiful Gates (Christianity)	Tzu Chi Association (Buddhism)
Period of recycling programme	10 years (2000)	5 years (2005)	6 years (2004)	15 years (1995)
Waste collection and segregation facilities	A few sets of recycling bins	2 recycling points; 1 set of recycling bins	1 recycling point (every month); 1 set of large recycling bins at Beautiful Gates building; 50 sets of recycling bins; 1 recycling centre; 3 lorries	150 recycling points every month, 7 recycling centres
Type of recyclables collected	Paper, plastic containers, glass, aluminium cans; cardboard	Paper, plastic containers, glass, aluminium cans; electronic devices; iron; used cooking oil	Paper, plastic containers, glass; aluminium cans; clothes, furniture; electronic devices	Paper, plastic containers; glass, aluminium cans, clothes, metal items, electronic devices
Final sales/handling of recyclables	Handled by the municipality	Sold to private recyclers	Buyers visit centre to buy recyclables; Sent and sold to private recyclers; Sold in a thrift shop and flea market	Sold to small and large private recyclers
Motivation to recycle	Environmental protection	Environmental protection; Charity	Environmental protection; Charity	Environmental protection; Charity; Cultivation of spiritual lifestyle
Use of proceeds from the sales of recyclables	Not relevant (activity is totally non-profit)	As a source of funds for the maintenance and repair work of the surau and other religious activities. Surau committee and volunteers.	As a source of income for disabled workers and as additional funds to maintain activities in the Beautiful Gates centre.	As a source of funds for charity and relief work under the Tzu-Chi association.
Human resource	Temple supervisor, temple cleaners and volunteers.	Surau committee and volunteers.	Disabled staff members of Beautiful Gates, with some assistance by volunteers	Volunteers – with some support from the association
Organisational structure	Temple management	Surau management (small mosque)	Christian centre for the disabled	Movement of volunteers – with support from Tzu Chi Association liaison office
Leadership (and role model)	No information	Initiated by Mr Hamzah, a surau committee member. Good support from imam and surau committee	Initiated by Pastor Sia Siew Chin, founder of Beautiful Gates	Initiated by Grand Master Cheng Yen in Taiwan. This inspired many Tzu Chi volunteers in Malaysia to set up their own programmes in various neighbourhoods
Continuous improvement	Organising large scale volunteer-led recycling campaign for days with high generation of waste	Deployment of recycling bins and recycling points; more long-term arrangement with recyclers to collect and buy recyclables; recycling of used-cooking oil	Deployment of recycling bins and recycling points; placement of recycling bins nearer to household; setting up more permanent recycling centres; more long-term arrangement with recyclers to collect and buy recyclables;	Deployment of recycling bins and recycling points; placement of recycling bins nearer to household; setting up of more permanent recycling centres; more long-term arrangement with recyclers to collect and buy recyclables
Support from other organisations	Local municipality Private sector NGOs	Local municipality Local politicians	Local municipality; Foreign foundation; Churches; Embassy of Japan	Local municipality Resident association
Community outreach	Visitors to the temple	One neighbourhood in Selangor	Some neighbourhoods around Petaling Jaya and recently expanding in other parts of Selangor	Various neighbourhoods around Selangor

(Source: Mohamad et al., 2012)

In municipal solid waste management (MSWM), it can increasingly see Muslim, Hindu, Buddhist, and Christian communities taking a proactive role in organizing successful recycling programs throughout the country and influencing good recycling practices, particularly in

urban areas. In the research of Mohamad et al. (2012), religious communities unquestionably have a role to play in environmental practices such as recycling. Additionally, Ross and Guèye (2021) had further agreed on the influence of religion and the urbanization process. This shows that religion also significantly affects refuse management through urban residents.

Thus, the following hypotheses were developed.

H<sub>3</sub>: There is a relationship between religion and an efficient refuse management system.

### 2.4 Household behavior and refuse management system

Attitudes are the major contributor to behavior. According to Sa`adah and Rijanti (2020), behavior is based on personal desire outside of its formal duties and is not directly or explicitly related to the reward system. In other words, it refers to the attitudes of urban residents who will affect the refuse management system. One of the keys that can show the attitude of urban residents is their recycling performance. Kouider (2022) described recycling as collecting and reusing waste materials, whether biological, mechanical, chemical, or thermal, and converting them into new products. Still, the decision and factors can be considered. According to Devadoss et al. (2021), one of the most critical challenges in source separation and recycling is the public's attitude towards making source separation and recycling a habit. The lack of behavior caused this result.

Moreover, the behavior could significantly impact the level of trash. This is in line with the study by Jiang et al. (2020) revealed that waste-dumping frequency is high in the evening but negligible in the early afternoon. Compared to working days, peak-value time at weekends occurs later in the morning and earlier in the evening. Also, behavior shows a strong positive effect on the efficiency of the refuse management system. Urban residents are the leading producers of municipal solid waste and are the primary targets and essential participants of urban waste management. The improvement of refuse management efficiency is inseparable from the residents' waste management behavior.

Thus, the following hypothesis was developed.

H<sub>4</sub>: There is a relationship between household behavior and an efficient refuse management system.

Following is the research framework for the study.

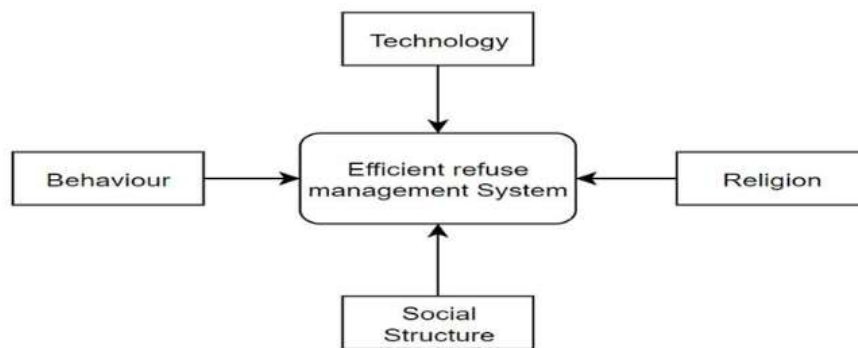


Fig. 1: A research framework

The research framework contains the independent variables and dependent variables, which are the factors that affect the efficiency of the refuse management system in urban areas. The independent variables are technology, behavior, social structure, and religion.

### 3.0 Methodology

The study embarks on a quantitative approach (Sham et al., 2020; Johan et al., 2020). A qualitative approach is deemed unsuitable for a questionnaire and survey (Kamaruddin et al., 2020). The questionnaire used in this study includes all the data collection techniques. Each person is asked to respond to an identical set of questions in a predetermined order at a specific time (Mohamed & Amr, 2018). The targeted population for this research is urban residents in Malaysia living in the metropolitan area of Kuala Lumpur. According to the Department of Statistics Malaysia (2021), in January 2021, the estimated population of Malaysia was 32.57 million. It is further reported that 77.16% are made of urban residents from the total population, and this figure is believed to experience a continual increase. A total of 600 participants were surveyed using an online platform using a targeted what's app group in a residential area and only included those who have reached 18 (Johan et al., 2020). Still, only 505 responses are valid due to the quota set in the questionnaire to control the validity

of each answer and used in the multiple regression analysis further to understand the scenario (Johan, 2020). The study excludes the respondents who have reached the age of 18 and staying in rural areas.

#### 4.0 Findings

Following are the research findings for the study.

##### 4.1 Technology

Table 2. Mean score analysis for technology

	Mean	Std. deviation
Using technology would enable me easy treat the garbage.	4.56	.915
Using technology would be advantageous compared to traditional modes.	4.58	.883
Using technology in the refuse system would be convenient when treating household waste.	4.58	.879
Technology has become one of the essential tools in refuse.	4.52	.936
I believe technology would help household refusal become easier.	4.57	.904

Table 2 shows the descriptive statistics for the technology, its minimum, maximum value, and mean and standard deviation. The highest mean was for the second and third items, 4.58, and the standard deviation was slight compared to the mean values.

##### 4.2 Behavior

Table 3. Mean score analysis for behavior

	Mean	Std. deviation
I like to recycle waste.	2.86	1.681
I usually separate my household waste at home.	3.07	1.632
I regularly recycle certain parts of my household waste by putting them inside the recycling bin.	2.84	1.708
Separation of household waste is not a waste of time.	2.62	1.722
For me, waste separation at home is beneficial.	2.76	1.739

Table 3 shows the descriptive statistics for the mean score of household behavior, its minimum, maximum value, and mean and standard deviation. The highest mean was for the second item, which was 3.07, where the majority of the household reported that they usually separate their household waste at home.

##### 4.3 Social structure

Table 4. Mean Score analysis for social structure

	Mean	Std. deviation
The garbage collection time is good in my house area.	2.91	1.708
There is a satisfactory resource for waste collection provided in my area.	2.80	1.742
The garbage collection service is good in my house area.	2.88	1.699
There are enough recycling bins near my house.	2.43	1.691
The activities for waste collection in my area are well organized.	2.70	1.716

Table 4 shows the descriptive statistics of the mean score for the social structure with the highest mean was reported for the first item, which was 2.91, as an indicator that the garbage collection time is good in their housing area.

##### 4.4 Religion

Table 5. Mean score analysis for religion

	Mean	Std. deviation
My religion always teaches me to keep clean.	3.10	1.609
Religion would make no difference to me in refuse management practice.	3.69	1.547
Religion had changed my routine about wastes practices.	2.35	1.503
I had joined the religious activities about environment/refuse management before.	2.17	1.534

Table 5 shows the descriptive statistics for religion, its minimum, maximum value, and mean and standard deviation. The highest mean was for the second item, which was 3.69, and the standard deviation was small compared to the mean values.

##### 4.5 Model summary of regression analysis

###### 4.6

Table 6. Model summary of regression analysis

Model	R	R <sup>2</sup>	Adj.R <sup>2</sup>	StdErr of the Est.	Change statistics
-------	---	----------------	--------------------	--------------------	-------------------

					R <sup>2</sup>	F	df1
1	0.466 <sup>a</sup>	0.217	0.211	0.77971	0.217	34.632	4

Regression was conducted to find the impacts of religion, technology, social structure, and household behavior on the refuse management system. The ANOVA table represents that religion, technology, social structure, and household behavior are the crucial determining factor of the refuse management system, with a significance value below 0.05 and F= 34.632. The value of R indicates that the model has good prediction quality. The value of R square has shown that the 21% of the variance in the refuse management system can be attributed to the change in the four IVs.

#### 4.5.1 Coefficients in regression analysis

Table 7. Coefficients

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig
1	(Constant)	1.678	.224		7.478	<.001
	Technology	.333	.044	.297	7.483	<.001
	Behaviour	.107	.028	.179	3.762	<.001
	Social Structure	.017	.027	.029	.613	.540
	Religion	.184	.039	.210	4.711	<.001

The coefficients in regression analysis shows that technology ( $\beta = .297, p < .05$ ), behavior ( $\beta = .179, p < .05$ ) and religion ( $\beta = .210, p < .05$ ) have made a significant contribution to the prediction of criterion variable. This is because their significant values are all less than 0.05. Besides, technology has the largest beta coefficient, which is 0.297. Hence, it is the strongest unique predictor in predicting the efficient refuse management system among urban households compared to behavior (0.179) and religion (0.210). Social structure has the smallest beta coefficient, which is ( $\beta = .029, p > .05$ ). It is the weakest unique predictor and insignificant factor in predicting every household's efficient refuse management system. With this result, three hypotheses were accepted, and one was rejected.

Following is the hypothesis being accepted:

H<sub>1</sub>: There is a relationship between technology and an efficient refuse management system.

H<sub>3</sub>: There is a relationship between religion and an efficient refuse management system.

H<sub>4</sub>: There is a relationship between household behavior and an efficient refuse management system.

Rejected:

H<sub>2</sub>: There is a relationship between social structure and an efficient refuse management system.

### 5.0 Discussion

The multiple regression showed that the three hypotheses are accepted, and technology is the variable that does significantly influences the refuse management system. The results were in line with past studies, such as the study of Devadoss et al. (2021) also revealed that technology had affected the efficiency of refuse management in Malaysia. Similar results were found by Mora et al. (2019), who mentioned that using modern technology or ICT solutions could promote environmentally sound waste management and reduce waste generation.

The result also revealed that social structure does not influence the refuse management practice. This is in contra with the result reported by Sohag & Podder (2020). They have concluded that social influences were essential reasons to develop strong refuse management and recycling practice. Yet the current study obtained different results may be due to the similarity of the pattern of urban residents in Malaysia regardless of the social structure.

Another construct measure on religion significantly influences the refuse management system. Mónico & Alferes (2022) also discusses the positive influence of religion in shaping the urban area. This shows that faith significantly influences the urban residents and practice.

The results were identified from Xu et al.'s (2017) study, which stated that behavior significantly predicts household waste separation behavior. Also, behavioral control positively affects sustainable waste management behavior (Muniandy et al., 2021). Lastly, household behavior shows a significant influence on the refuse management system. As a conclusion to the considerable discussion held previously, it can be found that the household refuses management system needs to be more well-form in an urban area, as it can solve many current refuse issues that metropolitan areas are currently facing. Data collection or the research should be expanded to other urban areas, including Selangor and Johor, to improve the result of the study in terms of generalization, which could produce a more in-depth understanding of the factor that affects the efficiency of the refuse management system.

### 6.0 Conclusion and Recommendations

The result of the current study implies that to improve the refuse management system, training for the improvement of household behavior should be provided. The municipal should focus on incorporating technology to improve the management system and create more awareness on shaping excellent behavior to enhance the refuse item in every household.

Therefore, the education system, especially in Malaysia, should be revised to create awareness of this issue. Our future generation should give more exposure to how to live in a better environment. Believe it, only through education can make people realize that waste management behavior would be affected lifestyle in the future.

Hence, the study is limited only to the urban residents in Klang Valley, Malaysia, at the particular period. Besides, the data analysis is limited only by using SPSS to verify the hypothesis developed. Finally, this study examines four (4) independent variables: technology, religion, household behavior, and social structure.

For future researchers, it is suggested to examine the variables for rural residents to compare the study results. In addition, the method of the study also can be enhanced to other analysis techniques and could be extended to other related variables.

In addition to practical implications, the present study also contributed to existing literature. The findings of this study contributed to the model of a waste management system that could be considered to be implemented by the government or any related agencies.

## Acknowledgments

The authors would like to express sincere gratitude to the Ministry of Higher Education under Fundamental Research Grant for funding this research project under the Special Grant Scheme data collection (FRGS/1/2019/ICT04/UCSI/02/1).

## Paper Contribution to Related Field of Study

This study can contribute to the body of knowledge to better understand urban residents' household refuse management system. This study also will provide a clear vision for stakeholders and comprehend the significance of supply chain refuse management. Hence, to achieve improvement in their refuse system in an urban area. This research will be able to hand out to future studies on related sites. It might also help the relevant fields in improving their household refuse system.

## References

- Ahmad, P., Misni, A., Kamaruddin, S.M., & Daud, N. (2019). A Conceptual Review of Green Neighbourhood Adaptive Model for Urban Living. *Asian Journal of Behavioral Studies*, 4(15), 1-9.
- Bernama. (2017). Religion Is Important in Protecting the Environment - Interfaith Groups. Retrieved January 31, 2022, from <https://www.astroawani.com/berita-malaysia/religion-important-protecting-environment-interfaith-groups-138039>
- Brunerová, A., Roubík, H., Brožek, M., Van Dung, D., Phung, L. D., Hasanudin, U., & Herak, D. (2020). Briquetting of Sugarcane Bagasse as A Proper Waste Management Technology in Vietnam. *Waste Management & Research*, 38(11), 1239-1250.
- Chua, H. S., & Bashir, M. J. K. (2020). Waste Management Practice in Malaysia and Future Challenges. *Handbook of Research on Resource Management for Pollution and Waste Treatment*, 19.
- Devadoss, P. M., Agamuthu, P., Mehran, S. B., Santha, C., & Fauziah, S. H. (2021). Implications of municipal solid waste management on greenhouse gas emissions in Malaysia and the way forward. *Waste Management*, 119, 135-144.
- Ellis, J., Wieselmann, J., Sivaraj, R., Roehrig, G., Dare, E., & Ring-Whalen, E. (2020). Toward a Productive Definition of Technology in Science and STEM Education. *Contemporary Issues in Technology and Teacher Education*, 20(3), 472-496.
- Esposito, P., Ricci, P., & Sancino, A. (2021). Leading for social change: Waste management in the place of social (ir) responsibility. *Corporate Social Responsibility and Environmental Management*, 28(2), 667-674.
- Ferronato, N., & Torretta, V. (2019). Waste Mismanagement in Developing Countries: A Review of Global Issues. *International Journal of Environmental Research and Public Health*, 16(6), 1060.
- Hornweg, D., & Bhada-Tata, P. (2012). What a waste: a global review of solid waste management. Urban Development and Local Government Unit, World Bank Report.
- Jiang, P., Fan, Y. V., Zhou, J., Zheng, M., Liua, X., & Klemeš, J. J. (2020). Data-Driven Analytical Framework for Waste-Dumping Behaviour Analysis to Facilitate Policy Regulations. *Waste Management*, 103, 285-295.
- Johan, M. R. M., Annuar, N., Joseph, J. S., & Kumar, S. K. (2020). Satisfaction Determinants of Airlines Industry in Malaysia. *Jurnal Intelek*, 15(2), 87-100.
- Kamaruddin, S., Wan Rosli, W. R., Abd Rani, A. R., Md Zaki, N. Z. A., & Omar, M. F. (2020). When Love Is Jeopardized: Governing Online Love Scams in Malaysia? *International Journal of Advanced Science and Technology*, 29(6), 391-397.
- Khan, I. N., Wan Dahalan, W. S. A., & Mohd Nopiah, Z. (2019). A Survey on Perceptions of Legal and Non-Legal Factors Affecting Sustainable Solid Waste Management in Malaysia. *Akademika* 89(Special Issue 2), 41-51.

- Kouider, L. (2022). Economic Advantages of the Recycling Business. *The Journal of Research and Scientific Studies*, 16(1), 513-531.
- Moh, Y.C., & Abd Manaf, L. (2017). Solid Waste Management Transformation and Future Challenges of Source Separation and Recycling Practice in Malaysia. *Resources, Conservation and Recycling*, 116, 1-14.
- Mohamad, Z. F., Idris, N., & Mamat, Z. (2012). Role of Religious Communities in Enhancing Transition Experiments: A Localised Strategy for Sustainable Solid Waste Management in Malaysia. *Sustainability Science*, 7(2), 237-251.
- Mohamed, A. F.R & Amr, A. (2018). Research Methodology in Business: A Starter's Guide. *Management and Organisational Studies*, 5(1), 1-23.
- Mónico, L. S., & Alferes, V. R. (2022). The Effect of Religious Beliefs and Attitudes in Intrinsic and Extrinsic Optimism and Pessimism in Players of Games of Chance. *Religions*, 13, 97.
- Mora, L., Deakin, M., Aina, Y. A., & Appio, F. P. (2019). Smart City Development: ICT Innovation for Urban Sustainability. In W. Leal Filho, A. M. Azul, L. Brandli, P. G. Özyur, & T. Wall (Eds.), *Encyclopedia of the UN Sustainable Development Goals: Sustainable Cities and Communities*. Cham: Springer
- Muniandy, G., Mohamed Anuar, M., Foster, B., Saputra, J., Johansyah, M. D., Khoa, T. T., & Ahmed, Z. U. (2021). Determinants of Sustainable Waste Management Behavior of Malaysian Academics. *Sustainability*, 13, 4424.
- Ooi, J. K., Woon, K. S., & Hashim, H. (2021). A multi-objective model to optimize country-scale municipal solid waste management with economic and environmental objectives: A case study in Malaysia. *Journal of Cleaner Production*, 316, 128366.
- Qasim, M., Xiao, H., He, K., Norman, A., Liu, F., Chen, M. Y., & Li, F. (2020). Impact of landfill garbage on insect ecology and human health. *Acta Tropica*, 105630.
- Rahim, S. A. A., Markom, M. N., & Alsagoff, S. A. (2019). The Roles of Public Relations in an Environmental Awareness Campaign: A Case Study of SWM Environment Sdn Bhd. *Jurnal Kemanusiaan*, 32-42.
- Ross E., Guèye C. (2021) Urban Governance Through Religious Authority in Touba, Senegal. In: Home R. (eds) Land Issues for Urban Governance in Sub-Saharan Africa. Local and Urban Governance. Springer, Cham.
- Sa'adah, N., & Rijanti, T. (2022). The Role of Knowledge Sharing, Leader-Member Exchange (LMX) on Organizational Citizenship Behavior and Employee Performance: An Empirical Study on Public Health Center of Pati 1, Pati 2 and Trangkil in Central Java. *International Journal of Social and Management Studies (IJOSMAS)*, 3(1), 112-131.
- Saja, A. M. A., Teo, M., Goonetilleke, A., Ziyath, A. M. (2018). An Inclusive and Adaptive Framework for Measuring Social Resilience to Disasters. *International Journal of Disaster Risk Reduction*, 28, 862-873.
- Sham, R., Hussin, A. A. A., Abdamia, N., Mohamed, S., Musa, O., & Rasi, R. Z. (2020). Blockchain technology application in a refuse management system, 2nd International Conference on Computer and Information Sciences (ICIS), 2020, pp. 1-5.
- Sham, R., Hussin, A. A. A., Abdamia, N., Mohd, M. (2019). Developing A Pollution Free Environment Framework Through Technology Integration (e-Hailing App). *Environment-Behaviour Proceedings Journal*, 4(10).
- Smol, M., Adam, C., & Preisner, M. (2020). Circular Economy Model Framework in the European Water and Wastewater Sector. *Journal of Material Cycles and Waste Management*, 22, 682-69.
- Sohag, M. U., & Podder, A. K. (2020). Smart garbage management system for a sustainable urban life: An IoT-based application. *Internet of Things*, 11, 100255.
- Tsai, F. M., Bui, T. D., Tseng, M. L., Lim, M. K., Wu, K. J., & Mashud, A. H. M. (2021). Assessing A Hierarchical Sustainable Solid Waste Management Structure With Qualitative Information: Policy And Regulations Drive Social Impacts And Stakeholder Participation. *Resources, Conservation and Recycling*, 168, 105285.
- UN News. (2018). Cities by 2050, projects new UN report | UN DESA | United Nations Department of Economic and Social Affairs. Retrieved January 5, 2022, from <https://www.un.org/development/desa/en/news/population/2018-world-urbanization-prospects.html>
- Xu, L., Ling, M., Lu, Y., & Shen, M. (2017). Understanding Household Waste Separation Behaviour: Testing the Roles of Moral, Past Experience, and Perceived Policy Effectiveness within the Theory of Planned Behaviour. *Sustainability*, 9, 625.